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MAR. 1 1979

Combat Crew

strategic air command

★★★★

FEBRUARY, 1979

PRIDE

Major General Earl G. Peck
Chief of Staff, SAC

The Strategic Air Command is composed of many diverse elements, all committed to a common end — securing the peace of this nation — and characterized by one common functional attribute — professionalism. Though vaguely defined, most of us think we know what professionalism is and, in any case, are sure that we exhibit it. But, I would like to focus on one indispensable ingredient of professionalism — one which is observably possessed by successful people and organizations in all sorts of endeavors — one which makes all the petty grievances, irritants, and annoyances pale to insignificance — one which reduces insuperable problems to interesting challenges. That ingredient is PRIDE!

Not the false pride which precedes a fall; not the empty pride with which some politicians point; not the hollow pride of aristocrats and kings — but the pride which derives, in individuals and organizations, from full confidence in doing an important job better than anyone else. It is the pride in an "HQ" ILS under horrible conditions; it is the pride in a SHACK on a target with long, obscure offsets; it is pride in changing a starter control valve to rescue an on-time takeoff when the chill factor is -67° F.

It is the pride of a crew or unit which has "maxed" an ORI or BUY-NONE, or negotiated the trauma of CEVG or SMES with flying colors. It is the pride of the missileer on lonely vigil under the frozen prairie and the pride of the security specialist above. It is the pride of CINCSAC in commanding a thoroughly professional organization. In short, the kind of pride we're talking about is the pride all of us in SAC can share from being members of the finest military organization in the history of the world — an organization without which the Free World would have ceased to exist and an organization upon which the Free World will increasingly depend in the perilous year ahead.

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FLARE

And yet, pride is a fragile commodity. All of our people have enjoyed several infusions of pride flowing from accomplishment — graduations, wings, missile badge, tech school, evaluations, promotions, etc. But it's up to all of us to sustain that pride — commanders and supervisors through appropriate recognition — and everyone, by doing our individual and collective jobs better than anyone else. Because, while fragile or perishable, pride is also contagious.

And if pride is contagious, the lack of pride is equally and insidiously contagious. That we cannot afford. Without pride there is no *esprit* and no competence. Without pride we can't do the job which the American people have entrusted to us. Let us each rededicate ourselves to fostering, kindling, and sustaining pride in excellence. We must, if we are to insure peace . . . with honor, with dignity, on our terms.

It is our Profession. ★★

Combat Crew

Magazine of the Strategic Air Command - 29th Year of Publication

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ON OUR COVER

The 93 BMW CCTS instructor — backbone of SAC's KC-135 and B-52G and H initial aircrew training. For more on the 93 BMW see page 4.

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COMBAT CREW is an internal publication of the Strategic Air Command with the sole purpose of promoting safety. The contents of this magazine are informative and not to be considered as directive in nature. Facts, testimony and conclusions of all mishaps printed herein may not be construed as incrimination under Article 31 of the Uniform Code of Military Justice. All names, dates and places used in conjunction with mishap stories are fictitous. Written permission must be obtained from Headquarters, Strategic Air Command, before any material may be reprinted by other than U.S. Air Force organizations. Use of funds for printing this publication has been approved by Hq. USAF. Distribution FX, controlled by IGFC. SAC units submit distribution requests through local PDO.

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"Bandits, 10 miles east of Bulls Eye!" The call over UHF guard channel sharpened the already alert crew of Tan Two. It was the first day of the Linebacker II campaign, December 18, 1972, as the B-52 sped to its assigned target six miles from the center of Hanoi, codename: Bulls Eye.

SMSgt Robert J. Lechtanski, the gunner on that aircraft, remembers that mission best of any he has flown. "I trained for that mission for years. Everything I learned at Castle came together during that combat flight. My training gave me confidence in myself, my crew and in the airplane to do the job that had to be done."

The words "Castle" and "Training" are synonymous. The 93d Bombardment Wing's combat crew training programs apply the most modern learning techniques to train all of SAC's KC-135, B-52G and B-52H aircrews. The wing currently trains approximately 91 B-52 crews and 216 KC-135 aircrews per year. The wing also includes the 924 AREFS which supports SAC's alert commitment as a totally operational unit.

"IT ALL BEGINS HERE"

The Castle Training program is divided into two phases. The first phase is academic training which is conducted by a 4017th Combat Crew Training Squadron staff of 65 highly skilled instructors who collectively have accumulated more than 190,000 flying hours. In academics, students acquire a working knowledge of aircraft systems and flight procedures. The duration of this phase of training depends on the crew position, varying from 20 to 35 days. The class entry dates are staggered so that the students of different crew specialties complete academics simultaneously and arrive at the flight line as an integral crew.

The headquarters, administration and classrooms of the 4017th are contained within the Waring Academic Center. Constructed specifically for the conduct of academic training, the soundproofing and environmental controls in this modern training facility enhance productive classroom work and trainer activity. In addition to classroom presentations, the students make extensive use of learning centers which contain various video tapes, sound/slide modules, and cockpit familiarization trainers.

The basic curriculum has evolved since the inception of the school and is continually modified to keep pace with changes in weapon systems, delivery tactics, and innovations in instructional technology.

To insure that instructional materials include all required skills and knowledge, 4017th instructors and flight line instructors have recently completed a task analysis and an identification of all educational and training requirements. This served as the basis for a revision of the academic program which ensures that the tasks and behavior needed to perform flight duties will be learned by the student.

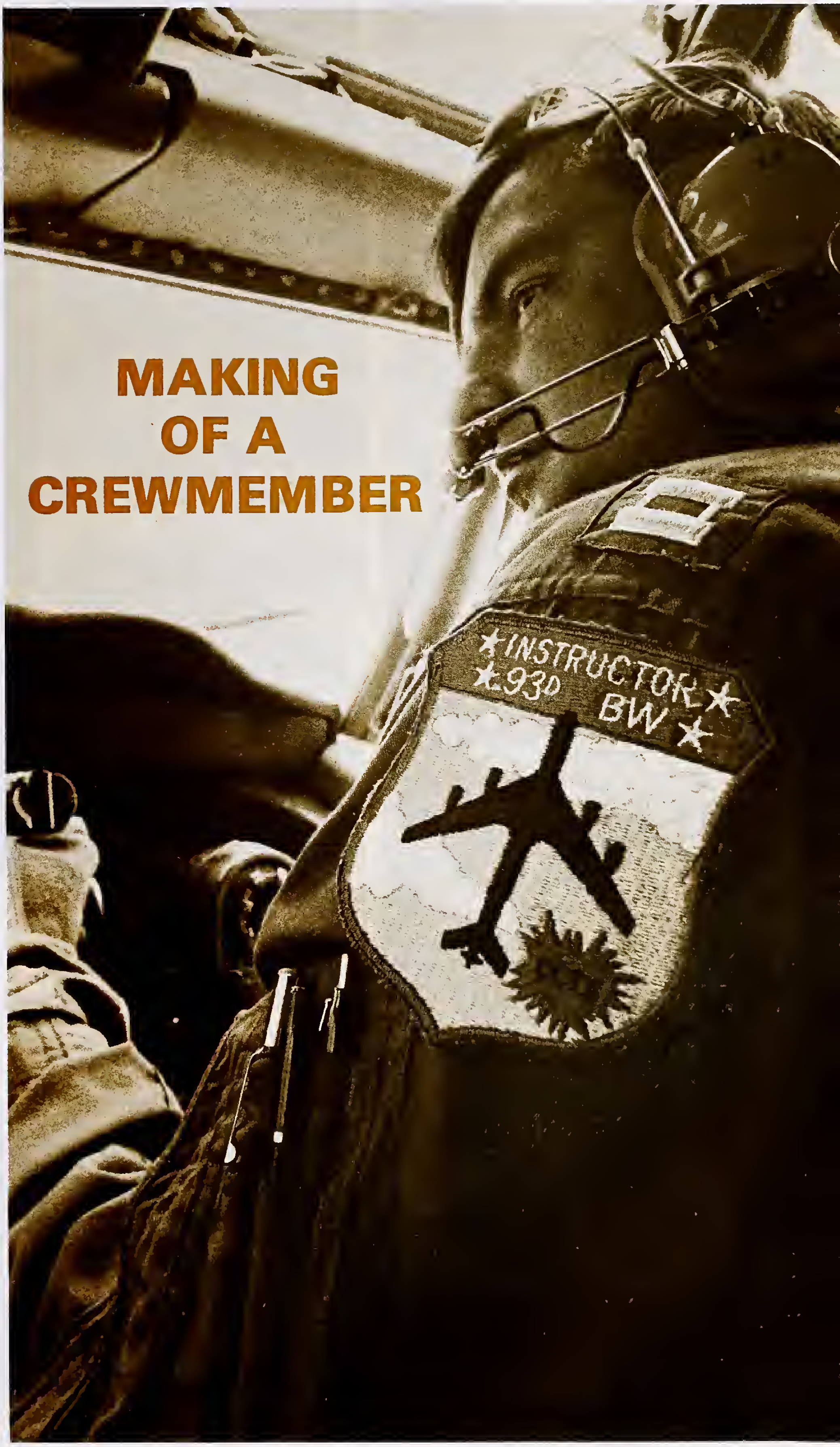
The strategy for achieving training objectives combines three elements; 1) presentation of information, 2) application or practice, 3) an evaluation. Varied media are used to provide individualized instruction suited to each student's ability to grasp it. These self-paced courses permit the quicker learning student to devote time to additional material after the individual has grasped the basic requirements. However, all students must satisfactorily complete the specified learning objectives prior to graduation. Throughout the ground phase of training, each new crew member uses a variety of "simulators." These range from Cockpit Familiarization Trainers (CFTs), which are simply wooden mockups of a crew station, through fully functioning Cockpit Procedure Trainers (CPTs). The concept behind the use of simulators is to ensure that prospective crewmembers learn all that they can in simple, inexpensive devices before exposure to actual flying training. For instance, B-52 student pilots learn the interaction of the KC-135 boom and pilot director lights with a training aid which costs $72 rather than in the aircraft which costs $4,400 per hour to operate.

In the CPT, the switches and equipment work exactly as in the aircraft. For pilots, the flight controls duplicate the response from the airplane, the only difference being that there is no simulator

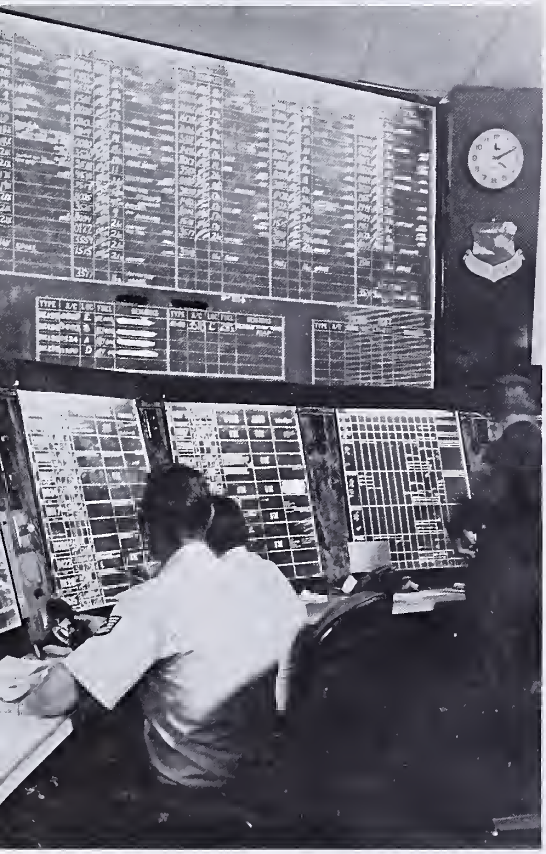
THE CASTLE STORY

MAKING OF A CREWMEMBER

Captain Ronald S. Bartlett
328 Bomb Squadron, Castle AFB



93d AREFS instructor pilot Captain Earl Orbin flys a demonstration approach while instructing a student KC-135 pilot. The CCTS instructor must insure the student crewmember has the proper "picture."



(Top) Cockpit familiarization trainers in the 4017th Combat Crew Training Squadron's learning center are wooden mock ups with sound/slide programs to introduce the student to equipment positioning and operation. Each crew specialty has its own trainers for both familiarization and procedures. (Above) 93 BMW Maintenance job control, the nerve center of Castle's maintenance effort.

(Right) Amn Steven W. Etrheim, boom operator, and 2d Lt Carmen C. Villiani, KC-135 copilot, listen as 4017th instructor pilot Capt David (Smokey) M. Rickerd informally recounts the finer points of air refueling. (Top) The 4017th CCTS learning center has numerous "carrels" where students can progress at their own pace. The sound/slide presentations are reviewed until the student is certain he has a grasp of the subject. (Bottom) Captain Dave Konerza must keep in practice as a radar navigator.

After every flight, students and instructors debrief a maintenance team on aircraft performance.

Photo's by Capt Ron Bartlett and courtesy The Valley Bomber.

Part of the new curriculum allows the instructor candidate to evaluate himself through the means of a video tape. This self critique is a valuable tool, enabling the new instructor to see himself in front of a class. Major Alvin E. Osborn, CFIC instructor pilot, operates camera as instructor navigator candidate Capt Timothy D. Kidwell gives his 20 minute presentation. (Right) A student gunner runs through a mission in the CFT.

movement and no scenery outside the windows. Both normal and emergency procedures are learned in the simulator prior to actual flight. New B-52 pilot digital simulators were placed into operation in mid-1977. The digital computers in these devices are extremely reliable and enable instructors to duplicate cockpit indications for any actual situation.

"WHERE IT ALL HAPPENS"

The flight line motto of the 93d AREFS, "Where It All Happens," indicates that this is the place where skills that the prospective crewmembers learned on the ground are applied to inflight situations. In this second phase of the combat crew training program, the student crewmembers work with the instructors of the 93d Air Refueling Squadron and the 328th Bombardment Squadron. In the 328th, they fly approximately 17 missions, in the 93d approximately 11 missions. The exact number of flights for any student crew varies based upon crew proficiency.

At both the 93d AREFS and the 328th BMS, students are formed into integral crews and assigned a specific team of instructors. All flight line instructors are certified and qualified combat crew members. Their EWO training requirements are similar to those of a comparable crewmember in other SAC wings.

A three day training cycle prevails throughout the remainder of the training program. The three day sequence of mission plan, fly, then critique enables student crews to completely understand what they are to do; make use of their knowledge in the air; then evaluate their performance once back on the ground.

Keeping busy is no problem for Castle students. Between the rigorous flying schedule, additional instruction is provided in advanced simulators and trainers to reinforce the flight training. Pilots and Electronic Warfare Officers receive a portion of their check ride in these devices where they must demonstrate satisfactory performance.

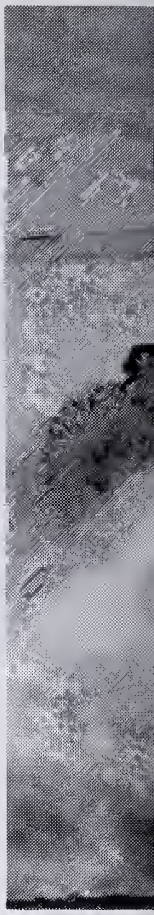
"WHERE IT ALL ENDS"

The culmination of the Castle training program is the inflight check ride. Members of the 93d Bomb Wing Standardization/Evaluation Division carefully scrutinize the performance of each student to insure that SACR 60-4 criteria are met. Every aspect of a flight, from mission planning through maintenance debriefing, is evaluated to ensure that the job is correctly accomplished.

Continued on page 22

Crew coordination is a critical

FIRE ON TAKEOFF



Capt Michael E. Parsons
93d BMW, Castle AFB

Our mission was CCTS number four. We were scheduled for air refueling, nav leg to low level, a high altitude bomb run and then back to the local area for transition. The PUP and I were particularly looking forward to our 55 minute air refueling track. Our tanker was unable to transfer fuel due to a boom malfunction on sortie number one and the PUP was DNIF for the next two sorties. The remainder of our student crew had progressed well to this point. We still had the usual growing pains with crew coordination and crewmembers occasionally drowned each other out on interphone or interrupted a UHF call. We had discussed the problem at length and were looking for improved performance in that area this time out.

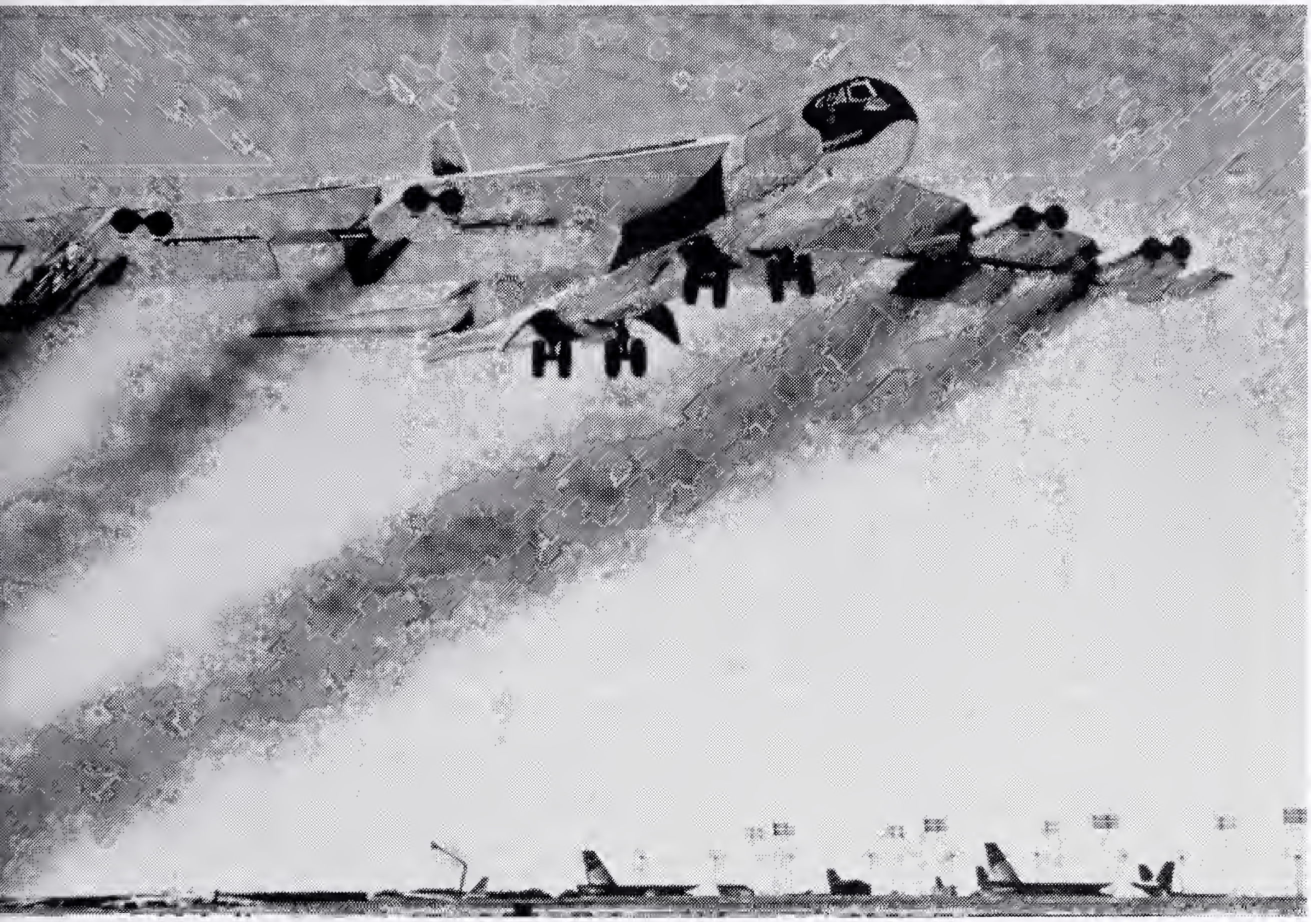
The weatherman promised us VFR throughout the day. The preflight, taxi and before lineup checks were well paced and at the appointed time we roared down the runway with the student copilot in control of the machine and the IP in the left seat.

Things began to go wrong shortly after takeoff. As the last gear tucked itself away, the number seven fire light came on and the EGT shot at an alarming rate to 850 degrees. Shortly afterward, the number eight fire light illuminated and tower confirmed that we did indeed have a fire on our right side. We acknowledged their call and the IP made the decision to attempt to extinguish the fire by shutting down the engine.

The copilot continued to fly the aircraft. As we reached 180 knots, the IP retarded, then closed the number seven throttle, and pulled the fire shutoff switch. The fire light remained on. Number eight throttle was then retarded to idle. Its fire light remained on also. Shutdown was then completed on number eight and a climb to 3000 feet was made before flap retraction was begun. The decision to shut down the engines prior to flap retraction was based on the IP's judgment of the severeness of the situation — fire of serious proportions reported by tower and an excessively high EGT reading. Between the time number eight was shut down and reaching 3000 feet, both fire lights went out. During the latter part of flap retraction, both fire lights came back on and the generator overheat light for number seven and the oil overheat light illuminated. After flaps up, the IP took control of the aircraft while the copilot looked for visual indications of fire, decoupled number seven generator and determined that the engine was responsible for our 155 degree oil temperature reading.

The generator decouple was successful, however, the light remained on for the rest of the flight. Some two minutes later, both fire lights and the oil temperature light went out. We proceeded to the local instrument airwork area at altitude to avoid high density low traffic and high terrain. The next four hours were spent burning down fuel. The number seven oil pressure had gone to zero. There were no indications of seizure, but as a precaution, we penetrated and made our six engine approach at 280,000 pounds.

Investigation revealed that the number seven combustion chamber shifted rearward past the fuel nozzles due to a worn positioning lug. The fuel spray pattern was directed back toward the diffuser case. The blow torch flame burned through the diffuser case. The number seven engine and cowling re-



ceived considerable heat damage.

What lessons can be learned from this incident? A couple of points are worth consideration. First of all, takeoff emergencies: Our 410,000 pound H model that day is fairly typical of normal training mission gross weight. Since our six engine work is done almost exclusively at 250,000 pounds and below, fuel shift is not normally a consideration. However, at typical takeoff gross weights, right up up through maximum gross weight, we pay large minimum directional control speed penalties for lack of fuel shift. Climb rate is also a consideration. The performance manual contains a wealth of information concerning the climb capability of the aircraft with less than all engines operating. Our aircraft handled the loss of thrust well. Higher gross weight combined with high temperature and pressure altitude may indicate that the engines be allowed to run as long as they are producing thrust. This is easily said, but believe me, when you know your house is on fire, the temptation to shut down those engines immediately will be great.

Good crew coordination was a big factor in the safe recovery of our aircraft. The time we had spent discussing interphone discipline paid big dividends during this flight. There were no extraneous comments from anyone. Soon after we set 311.0 in the UHF radio, command post began to ask questions. The pilots were not monitoring the frequency; however, our EW was able to evaluate the pilot's conversation and relay the necessary information to command post without asking the pilots questions at a critical time. Enough cannot be said for our student copilot's fine efforts. Since this was only his fourth flight in the aircraft, it would have been understandable if he had quit flying altogether and simply handed the aircraft over to the IP. However, he remained in firm control and enabled the IP to analyze the situation in a deliberate, if not a completely calm manner. Though the PUP had flown with us only once previously, he had already silently reviewed the appropriate emergency procedures checklist and was ready with the information when we called for it.

The entire crew contributed to the successful conclusion of our emergency. How much different it could have been if the entire load had been placed on one individual.

OPS—UP-DATE

HQ SAC DCS/OPS

EDITOR'S NOTE: *Combat Crew* welcomes UP DATE as a regular monthly feature. Its purpose is to inform you, the combat crew member, of new programs and initiatives in the operations area. The notes and articles in this feature will be provided by the HQ SAC, Deputy Chief of Staff, Operations, and his staff. Major General Jack L. Watkins is the current DCS, Operations. His Air Force career has included assignments in TAC, MAC, HQ USAF, AFSC, JCS, AU and SAC. In addition to his present assignment, General Watkins has served in SAC as a Bomb Wing vice commander and commander, Air Division commander, and as the SAC Assistant DCS, Operations. He is a command pilot with more than 6500 flying hours and wears the Missileman and Parachutist badges.

DIRECTORATE OF COMMAND CONTROL--BRIG GEN KENNETH L. PEEK, JR.

NEW JOBS FOR MISSILE LAUNCH OFFICERS. There are new and challenging jobs on the horizon for Titan and Minuteman launch officers. Due to a recent reorganization at HQ SAC, there is now a Space and Surveillance Division in the Directorate of Command Control. Positions in the division will be filled from the ranks of the Warning Systems Controllers (WSC). Due to the projected rapid growth, time spent as a WSC should be minimal. Officers interested in the position of Warning Systems Controller (WSC), with future advancement to the Space and Surveillance Division should contact HQ SAC/DOCW, AUTOVON 271-2560/2564. (DOCW)

COMPUTER ASSISTED AIRCREW TRAINING. HQ SAC/DOC has added a new feature to their computer assisted command control training capabilities. In addition to the Emergency Actions controller question bank and the Force Status controller computer assisted scenario training, a monthly command control aircrew examination is now available for unit instructional use. The new training exam is designed to assist instructors in providing crew members with up-to-date and standardized training. (DOCF)

DIRECTORATE OF TRAINING--COL HARRY L. BROWN

BUSY HURDLER III, to be implemented 1 April 1979, is a B-52D crew exchange program between the 43 SW, Andersen AFB, Guam and CONUS B-52D units. The basic plan calls for the mutual exchange of a crew for a two to three week period. CONUS B-52D units will participate on a rotating basis. The participation of the 7 BMW, Carswell AFB, Texas, will be double that of the other B-52D units since it has two squadrons. Each exchange crew will receive three training flights. The 43 SW crews rotating to the states will receive CONUS training in low level navigation and bombing, terrain avoidance, and RED FLAG participation. CONUS B-52D crews rotating to Andersen AFB will train in overwater navigation and contingency operations. They will also participate in a Korean low level mission and a live drop mission. (DOTT)

RED FLAG "FIRSTS." Many of you have probably noticed a considerable increase in SAC's RED FLAG activity. During RED FLAG 79-2, we first topped 100 missions in less than three weeks — and were just below that figure in 79-3. Another first was achieved by the 319 BMW when, on 16 November, Capt William Ladd's crew landed a B-52H at Nellis to enable the crew to attend debriefing. At least one "52" will be scheduled to land at Nellis in all future day scenario exercises. Finally, we are now in the night TA, TFR business — in the mountainous terrain of the RED FLAG ranges. It's dark and different, and approaches the ultimate simulation of EWO. (DOTP)

DIRECTORATE OF OPERATIONS--COL GEORGE P. TYNAN

SAC CONTINGENCY DIVISION. Readiness is the watchword throughout the Office of the Joint Chiefs of Staff, the unified and specified commands, and the services. The Strategic Air Command as a supporting command to the other unified commands must be ready to respond to time-sensitive contingency crisis situations. Recently the SAC DCS, Operations, Director of Operations reorganized its Tactics Division (DOOB) to enhance operational readiness in support of contingency operations. The new Contingency Division (DOOC) is the SAC single point of contact for contingency crisis action management, contingency and collateral missions, contingency exercises, and aircrew tactics. The Contingency Division encourages and welcomes any comments, questions, or suggestions from crew members and other interested SAC personnel. Telephone numbers are AUTOVON 271-5785/5786/5118, and STN Drop 23 and 27. (DOOC)

BULLET BLITZ, the Follow-on Test and Evaluation program of the SHORT RANGE ATTACK MISSILE weapon system, commenced in 1972 shortly after activation at Loring AFB of the first operational SRAM wing. Ten missiles are launched annually in support of the program. On 7 February, a 416 BMW aircrew from Griffiss AFB will launch a SRAM on the Eastern Test Range to demonstrate the damage assessment/strike capability of the weapon system. Then on 28 February, an FB-111 aircrew from Plattsburgh AFB will launch a missile on the Tonopah Test Range, NV. Both missiles will be programmed to fly an inertial profile from the launch point to the target and will be configured with telemetry packages for data collection on missile performance. (DOOV)

DIRECTORATE OF MISSILES--COL JOE L. CHURCH

SMES. The 3901 SMES nine month visit concept is being changed effective 1 April 1979. The new cycle has each missile wing and 1 STRAD being evaluated not more frequently than 9 months or normally beyond 12 months from their previous evaluation. Under the revised concept, each unit's management capabilities are increased without degrading the command's capability to assure the readiness of our ICBM forces. (DOMM)

DIRECTORATE OF TRAINING--COL HARRY L. BROWN

A New Concept in B-52 Aircrew Continuation Training

Change is a basic and necessary element of our society. To grow and flourish society must accept and implement new ideas and concepts. SAC is on the threshold of a new concept in its B-52 aircrew continuation training program.

In the spring of 1978, the Directorate of Training revised the current B-52 aircrew continuation training program. Guidelines for the revision required emphasis to be placed on crews flying more frequent but shorter missions. These missions were to be oriented toward increased event training. The new training program was to be conducted with the current resource allocations of manpower and flying hours.

With these guidelines, a MAJCOM Operations and Maintenance conference was held at SAC Headquarters in May 1978. The purpose of the conference was to develop the basic structure for the new training program and to consider two units as test candidates to test the new training program.

The conference established that the objective of this new training test program is to determine if a training program oriented toward increased event training coupled with more frequent, shorter missions, can maintain the required level of aircrew capability. Those events that attain and maintain proficiency in low altitude target area penetration and weapon delivery tactics are to be emphasized. Two B-52 bomb wings, the 92 BMW, Fairchild AFB, Washington, and the 416 BMW, Griffiss AFB, New York, were selected to test the program. The training test program began on 1 September 1978 and will last for six months, ending 28 February 1979.

The training test program provides for twelve sorties per training quarter for each Mission-Ready B-52 crew. The twelve sorties consist of seven event oriented missions, four profile missions, and one pilot proficiency mission. The event oriented sortie is a short duration sortie of approximately five hours duration, designed to improve crew proficiency in low level penetration and bombing. Five of the seven event training sorties will be scheduled for low level navigation and bombing. The remaining two event training sorties will be used for wing directed training. The profile sortie is of approximately seven hours duration (may be increased or decreased in duration to accommodate Higher Headquarters Directed or unit diversification requirements) designed to train crew coordination, mission pacing, and proficiency. This mission will consist of a take off and departure, air refueling, low level navigation and bombing, and a system operations exercise (replaces celestial navigation requirement). The pilot proficiency sortie is of approximately two hours duration, designed to be used primarily for training in instrument approaches and emergency procedures.

The increase in sortie numbers without expending additional manhours is being accomplished primarily through a "Cold Seat Swap" (CSS) quick turn around concept. This concept involves getting two sorties for the "price of one" sortie and maximizes the unit's maintenance capability. It works in the following manner. Two aircraft launched on earlier sorties are scheduled to land at the same time. Prior to landing, each aircrew will report its aircraft's discrepancies to the command post. The list of discrepancies from both aircraft are compared and the best aircraft is chosen as the CSS aircraft. This procedure requires a thorough and detailed list of discrepancies from each aircrew and close cooperation between the unit's maintenance and operations personnel so a quick CSS decision can be made. Once the CSS aircraft is chosen, it will land first, at its scheduled landing time. It is then parked on the hammerhead and the engines are shut down. The next crew is waiting there and is briefed by the old crew on the crew bus. The new crew then accomplishes their normal preflight procedures. Maintenance on the CSS aircraft is limited to a change of the drag chute and minimum maintenance items that can be completed during the ground time. Maximum ground time is one and one-half hours. No ground refueling is accomplished since the aircraft lands from its previous flight with enough fuel (gross weight approximately 290,000 pounds) to be able to accomplish air refueling after its relaunch without going below minimum refueling weight. A minimum of one CSS sortie is scheduled to fly each flying day at each test unit.

The increase in sortie numbers without expending additional flying hours was achieved by deleting the celestial navigational leg requirements. A new concept in inflight and ground training is expected to maintain the navigational skills necessary to successfully accomplish an EWO mission. The new inflight training concept requires inflight training through an Equipment Operations Exercise. This is an inflight exercise designed to provide "hands on" equipment operation necessary to maintain navigational skills. The radar navigator's requirements for this exercise are to obtain a target timing wind, a memory point wind, a SRAM memory point wind, and assist the navigator in celestial computations by accomplishing a celestial precom check. The navigator's requirements for the exercise are to obtain a MD-1 fix or MPP, a celestial fix or MPP with the sextant, and a manual celestial heading shot. A grid entry and exit exercise is also required. These exercises or items may be individually completed any time during the high altitude portion of the flight. The ground phase of celestial navigation training is accomplished through "sound on slide" programs that are presented in real time situations. Celestial ground training will further be enhanced by a celestial training computer expected to be operational and available to all units by early spring of 1979. This celestial training device also operates in real time situations and provides a great deal of flexibility for ground training. Each nav team accomplishes three integrated celestial grid ground missions each training quarter. These ground missions along with the system operations exercise is expected to maintain proficiency in celestial navigational skills.

The test units do not fly any celestial navigational training legs except on SACR 60-4 evaluations. The purpose of this evaluation is to validate this new concept of training. Individuals are not penalized for unsatisfactory results.

Under this new training concept, individual training requirements that emphasize low altitude target area penetration and weapon delivery tactics have been increased. Pilot and copilot low altitude navigation legs increased from 3 to 6 legs, and TA/EVS bomb runs increased from 2 to 6 bomb runs. Radar navigator and navigator low level multiple bomb run requirements increased from 9 to 18 bomb runs, and SRAM low launches increased from 2 to 6 launches. The Electronic Warfare Officer's ECM run requirements increased from 10 to 12 runs. The gunner's training requirements, other than sorties, remain unchanged. The quarterly sortie requirement for all crew members increased from 9 to 12 sorties.

Aircrew mission planning for the seven short event oriented training sorties is kept to a minimum. All required crew mission planning on these sorties is accomplished on the day of the flight. The wing staff provides completed Training Mission Folders (TMFs) and canned paperwork which requires little additional work on the part of the crew. The crew normally reports for an event training sortie three-to-four hours prior to their scheduled take off time. They accomplish target study, complete and review the mission data, and conduct an aircrew mission briefing. They then proceed to base operations to get the weather briefing and file their clearance. Next, the crew proceeds to their assigned aircraft where they follow normal checklist and timing procedures.

The concept of this type of training program with the "back yard" bombing philosophy requires additional low altitude routes within the immediate vicinity of each main operating base. The current location and number of SAC STR routes cannot support this increase in training activity. Each unit must develop its own IR and VR routes with associated target complexes. Bomb scoring is accomplished by K-17 vertical camera photography. It is recommended that each base have five to six of these back yard routes available along with five to six STR routes available to use.

On 1 January 1979, four additional B-52 bomb wings were added to the training test program. Data collected and results recorded by the units participating in this test program will be used to revise the current B-52 continuation training program. After the test ends on 28 February 1979, another MAJCOM Operations and Maintenance conference will be held at SAC Headquarters to revise the applicable volumes of SACM 51-52 based on training improvements resulting from the test. A revised B-52 aircrew continuation training program will be implemented approximately 1 April 1979. The general impression of most aircrews involved in the new training program is that it will work and can be valuable in keeping combat readiness at a high peak. (Major Jimmy V. Deal, DOTT)

Are you a cookbook crew?

Capt Julius F. Sanks
SAMSO, Los Angeles Air Station

One day, while giving instruction to a missile combat crew, one of my students asked me, "How do you become an expert on the weapon system?"

I hadn't given the question much thought until he asked it; I had simply tried to fill the gaps of my knowledge in a rather haphazard manner over the years, especially after becoming an instructor. But, on reflection, it became clear that my student had asked a good question.

Many Minuteman crews are "cookbook crews." A person on a cookbook crew never fully understands what he is doing. In most cases, he performs the required actions correctly, but he is in trouble whenever an unusual or unfamiliar situation presents itself.

On the other hand, there is the expert. He is the guy who always displays confidence in the trainer, and he reacts quickly to any situation he is faced with. He seldom makes an error. He is sometimes heard to say that he can handle a standboard any day of the week — and he means it.

If you become an expert, you will find all of that to be true about yourself. The evaluator is suddenly not the boogeyman he used to be. Standboard failures will only happen to the other guy. Expertise promotes confidence and accuracy, the two key requirements for a consistent rating of "highly qualified."

So, you've decided to become an expert. How do you go about it? There must be more than simply following a checklist, or being able to perform in the trainer; and often a crewmember with less than a year of alerts under his belt gains a reputation as an "expert." He is not always an instructor or evaluator, and in fact may never have been one. How did he become an expert?

The obvious place to begin on the road to expertise is the crew's weapon system operational technical data. All but the weakest crewmembers are able to accomplish the basic procedures: to launch, you do so and so, and away the missile goes. Sound easy? It is — but even so, the vast majority of errors committed in the trainer are a direct result of failure to read the checklist, and then do what it says.

In many wings, you hear the words, "checklist discipline: until you are sick of them. The simple fact remains, however, that checklist discipline works. It can save you from an error in the trainer and can save you from embarrassing explanations concerning a mishap in the field. The first step on the road to expertise is to develop good checklist discipline. If you want to become an expert, it isn't enough to be able to follow the tech order as if it were a cookbook. That's as far as the cookbook crews ever get, and you want to go beyond that. Many problems, especially in the field, are not explicitly covered in the tech orders or manuals, and it is up to the crew to come up with a solution. Additional knowledge is necessary to be able to make a proper decision.

Are you sure you understand how the weapon system works? Really sure? All right, then here is a question for you. How long before the first stage ignites does the launcher closure open? You can find the answer in the maintenance tech order, which describes the command and monitoring system. This is admittedly a nitpicky question, but the point is that you might want to brush up on the weapon system description, both in the crewmember's weapon system tech order and elsewhere. You'll never be able to become an expert without being really familiar with the weapon system itself, and how it behaves.

To handle unusual problems, it is necessary to know why you are doing what you are doing. In the field, the missiles (and people) like to do strange things, and a little analysis is required before taking action. In these situations, the crew that relies on cookbook procedures can run into trouble. In Minuteman, this is particularly true when the crew is confronted by an unusual security problem.

Knowing the "whys" of the procedures and requirements of the manuals can also help in the trainer.

Understanding what is required to be done in a particular instance makes it easier to accomplish the right procedure. Many times, a crew tries to handle an emergency air conditioning unit (EACU) fault as if they were attempting a magical spell. Rather than understanding how the EACU works, and how the checklist leads them through the machinery to correct the problem. These crews depend totally on the cookbook to lead them by the hand. While they are often successful this way, if they also have poor checklist discipline, or are distracted by a multiple sequence, they'll buy an error for sure.

Understanding the subtler characteristics of the weapon system, and how the T.O. and manual requirements are related to them, isn't as tough as it sounds. Next time you are on alert, take a little time to wargame a checklist you find difficult. Ask yourself, "Why must this step be done?" Leads, notes, cautions, and warnings seem to cause the most trouble. A little comparison of the procedures with the description of the weapon system contained in the T.O. will usually explain things.

If you are having difficulty understanding the whys and wherefores, try asking yourself what could happen if you don't accomplish the required action. Sometimes, the answer is obvious: no keyturn, no launch. Often, though, the answer takes more digging, but it is there to be found.

Still stuck? Talk to people who are considered to be experts. They'll often have an answer. Through the necessity of having to answer questions full time, anyone who has spent much time as an evaluator or instructor can handle any questions you will have, but watch out for cookbook crews in the shops (they do exist). During talks with experts, you will find that many things you thought were required by some obscure document are in fact recommendations made by DOT to simplify things for the cookbook crews.

If your question is still more technical, try your wing's Technical Engineering Division (TED). TED exists to assist other agencies in solving problems they are unable to solve within their own resources, and that means operations as well as maintenance. They will even answer your question in writing, if that's the way you want it.

Watching some of the more outstanding crews in the trainer can show you a lot. They won't handle a given situation the same way you might. After the ride, ask them why they reacted the way they did. Any expert crew will be able to give you a better answer than "that's the way it's always done."

The trainer is also a great place to learn from the mistakes of others. Error listings have their uses, but the best way to learn from mistakes is to watch them being made. From the safety of the cab, watch another crew and analyze the actions that get them into trouble. Would you have done the same thing? If so, why? If not, is your technique any better? You may identify an area you need to work on this way.

To polish your knowledge, practice relating your new understanding of the weapon system to the procedures you accomplish. Do this both in the trainer and in the field. In a very short time, you will find yourself handling problems faster and more accurately than you would ever have believed possible.

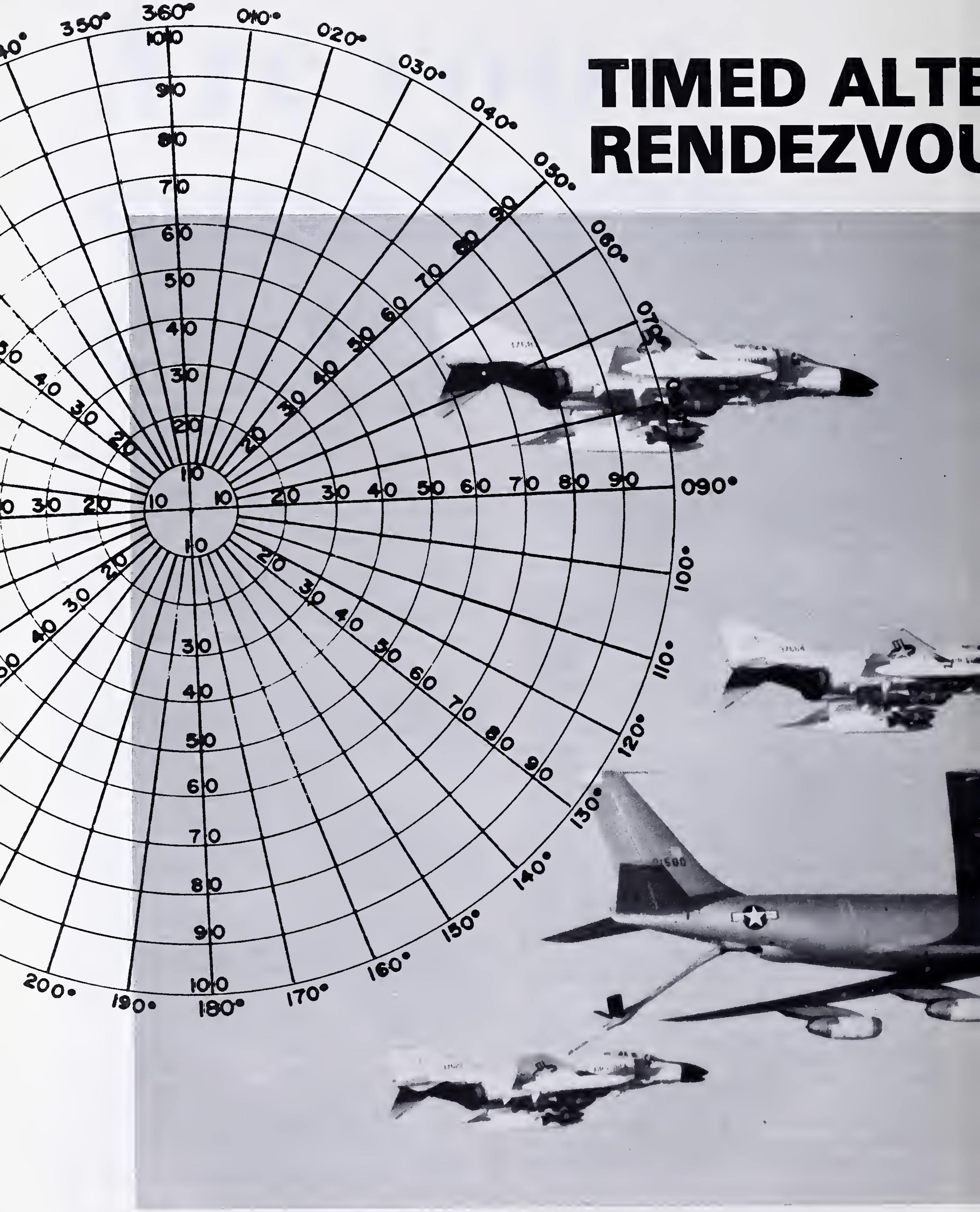
One final thing to learn is the mechanics of the trainer. It is a fact of life that the weapon system knowledge of missile combat crews is judged primarily on trainer performance. Isn't it worth taking the time to learn how the trainer works? You will find much of value both in the trainer T.O. and in the minds of the operators. The behavior of the trainer command and monitoring system is not identical to the one in the field, and the differences can be important to an expert. Find out what the trainer does — you may be surprised at what you discover.

Now, some will say the T.O. or manuals aren't written well enough to be of much use. In most cases this is not true if you are willing to use a little gray matter while reading the material. (I do agree that it can be awfully dry.) If you find a case in which it is true, submit a proposal for a change. I know SACR 207-16 can be a tough one to understand, but most of the answers are there. If there isn't an answer, you are free to use your own judgment. The reg says so.

Of course, there can be some aggravations associated with improving your expertise. You may find the senior evaluator asking you how you would handle some difficult situation. Crews will call you with questions while you are on alert. The DO will want you to try out for the Olympic Arena team. But when you finish a standboard early, brief it out in ten minutes, and realize that you can take a check any day of the week and come out okay, you will agree that increasing your expertise was worth the time you took to do it. You've made it — no more cookbook crew!

About the author. Capt Sanks was formerly assigned to the 341 SMW, Malmstrom AFB, as a missile combat crew commander. While there, he represented the Blanchard Trophy winning 341 SMW in the 1976 Olympic Arena. His crew won the Best Crew Award. Capt Sanks is now assigned as a Space Shuttle Operations Manager, Space Transportation SPO.

TIMED ALTE
RENDEZVOU



RNATE S

MAJOR GERALD A. DIXON
916th AREFS, Travis AFB

The Kohler method is one of many acceptable methods that can be used to accomplish an alternate rendezvous. However, I believe I have been using and teaching a method of timing to perform an alternate rendezvous which is more accurate and easier to accomplish.

In one area, my method agrees completely with the Kohler method, half of the problem is to determine the distance between the tanker and the receiver. TACAN positions work fine, as does air-to-air TACAN when available. If you know in advance you will be using an alternate rendezvous, as is normal with fighters, take a TACAN fix when the receivers report departing the ARIP. If you are working along a TACAN radial, differential DME is adequate. Care must be taken, however, when using a common TACAN to avoid slant range errors caused by the tanker offset and proximity to the station. Also to comply with the tech order ask ATC for the receivers relative position. Center is normally glad to give you a radar position, although if you expect them to give you a countdown and call your turn you are dreaming. In reality any method which can accurately determine the distance between the tanker and receivers will work. Obviously, the more accurate the distance the more precise the rendezvous.

The second step of the problem is what is the closure rate. The Kohler method assumes all fighters are closing at .90 Mach, all heavy receivers are closing at .80 Mach, and the tanker is at .70 Mach. This is a questionable assumption which can blow the whole rendezvous. If our tanker is down at 18,000 feet on a standard day, working a flight of F-105s out of George AFB, in AR-317, our true airspeed will be down to 349 knots TAS (.56 Mach). Conversely, if the tanker is at 34,000 working with F-15s, our 275 IAS will result in 449 knots TAS (.78 Mach). The receiver's TAS will vary just as significantly from a C-5 at 20,000 as compared with a B–52 at 32,000 or a F–16 at 32,000 or a A–7 at 18,000 feet. The solution to this problem is simple. Ask the receiver for his true airspeed during the rendezvous. If he doesn't have it handy, use his indicated Mach and spin it on the whiz wheel. With heavy receivers, the TAS is part of the rendezvous information exchanged by the navigators.

Once you have the receiver's true airspeed, you are on the home stretch. By adding the receiver's true airspeed to the tanker's, you now have the closure rate. Since your receiver has a tailwind, if you have a headwind, and it takes approximately 100 knots of direct crosswind to reduce your total

ground speed by 10 knots, forget the winds.

With the distance between receivers and tanker known, subtract the turn range to determine the distance to the turn. I realize the Dash-3 recommends a 21 NM turn range for most receivers during alternate rendezvous; however, if you have ever rolled out at 11 miles in front of a C-5 you can realize this isn't always the best advice. I wouldn't advocate violating recommended procedures, but it can be very helpful to check the turn range chart in the Dash-3.

Now with distance to the turn determined and our closure rate known, all that remains is a simple computer problem. In the interest of accuracy, I recommend using the second scale on the computer. With the second index on the inside scale lined up with the total true airspeed, go to the distance to the turn on the outer scale, and read the time to turn below it. Remember the minute scale now becomes seconds and the hour scale becomes minutes.

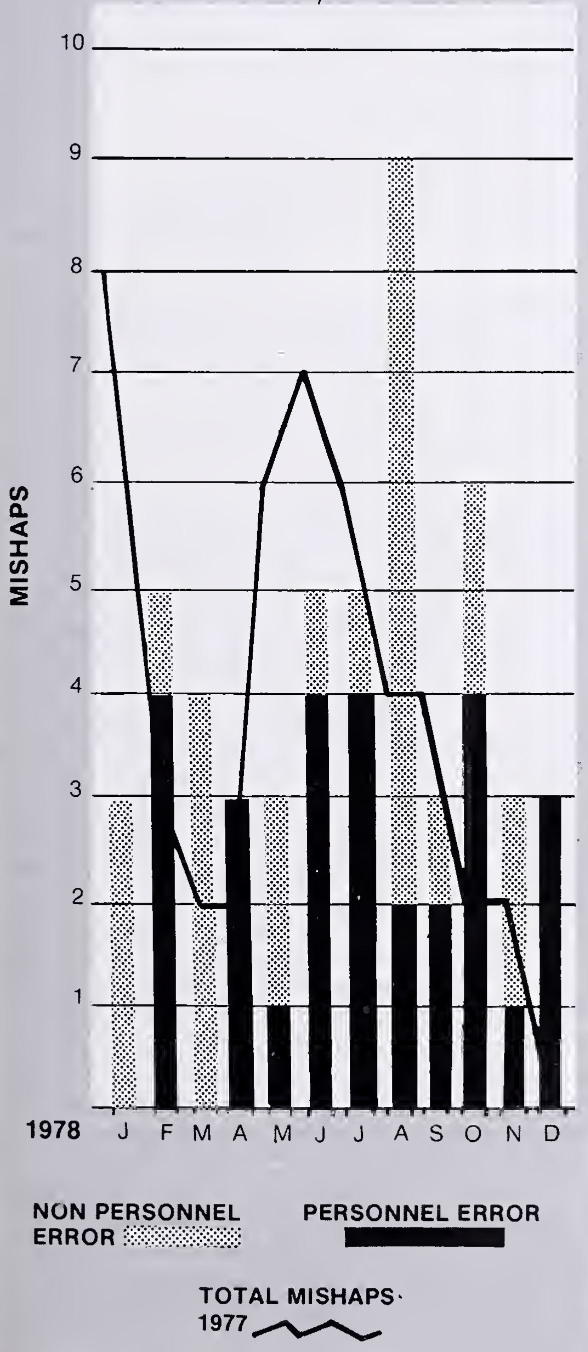
Now for drill, let's try an example. Assume we are working AR-317 at FL 200 against a flight of four F-105s from George AFB. Temperatures are close to standard and our 275 knots IAS is giving 362 knots TAS. Our first contact with Thud 21 flight is when he says he is inbound from the IP. (We wonder how far inbound.) "Thud 21, say your DME from Peach Springs." "Roger, Thud 21 is showing 85 DME." Start timing. Our DME from PGS is showing 15 DME, but the navigator says, "Considering slant range error, I have us 11 miles down the track." Great, 85 DME minus our 11 miles gives a forward range of 74 miles, minus a 21 mile turn range gives 53 miles to the turn point. "Thud 21 say your true airspeed." "AH — I don't have it but I'm showing .78 Mach"; .78 x 600 knots should be about 470 knots TAS; 470 plus 362 gives a combined closure of 832 knots on the outer scale; 53 miles on the outer scale is opposite 229 seconds on the minute scale. Drop down to the hour scale and find this is 3 minutes and 49 seconds. While waiting for the clock to run down, why not try an ADF check and cross-check the DME to update the time. It's simple, it's accurate, and it works. Remember, the aircraft must be headed toward each other before starting the time.

If you really want to fine tune the technique, during the TAS computations if temperatures are significantly different than standard, use the corrected outside air temperature opposite the Mach index on the computer to determine the TAS to improve accuracy. In addition, as you are closing and obtain new distance information, use it to cross-check and update the timing. Since the closure rate should not change, simply subtract the turn range from the distance and use this as a new distance remaining with the old combined TAS. The computer is already set up for it. No pain — no strain.

1978 YEAR END

Missile Mishap Report

DOD CLASS A, B and C



MISSILE SAFETY — 1978 — A total of 52 missile mishaps occurred in 1978. MINUTEMAN contributed 30, TITAN II 8, and AGM-69 (SRAM) 14. This total included three Class A mishaps and two Class B mishaps. These numbers reflect a 13 percent increase in total mishaps over last year's total of 46. Personnel error also increased approximately 13 percent and was responsible for 63 percent of all 1978 mishaps. The present loss expressed in dollars is in excess of $3 million and will increase further after the total loss assessment is compiled for the TITAN II Class A mishap. Two Class A mishaps occurred during operational testing: an AGM-69 exploded in flight, and a MINUTEMAN II was destroyed in flight by the range safety officer. The total dollar loss of these two mishaps alone was $2.7 million. The most catastrophic mishap occurred during on-loading of oxidizer on a TITAN II missile. Due to personnel error, 13,800 gallons of nitrogen tetroxide were spilled. Two personnel died from exposure to the toxic vapors and another was partially disabled. Two recurring mishaps in MINUTEMAN were water intrusion into the launch facility, and damage to electronic components due to failure of the S-2 emergency fan to provide cooling air. Deficiencies in the butterfly valve lock (BVL) contributed to 50 percent of all TITAN II reported mishaps. Damage to the AGM-69 missile fins during loading/unloading was the most prevalent mishap in this system and accounted for one-third of all SRAM mishaps.

Even though mishaps this past year increased over those of the past two years and the statistics are bleak, some positive gains were realized. There was an 80 percent reduction of Class B mishaps. Through reporting and dissemination of SRAM fin damage early in the year, no other such mishaps have been reported since August. Again through mishap reporting, aggressive programs were initiated to identify and correct water and corrosion problems in MINUTEMAN silos. A program to overhaul S-2 emergency fans at Ellsworth AFB will begin in early 1979. A protective cover for SRAM radomes is now used for protection during jammed arm/disarm plug removals. Several deficient items discovered in TITAN II and reported are now being corrected.

There is no crystal ball or magic formula we can use to determine how many mishaps were prevented by conscientious safety personnel, managers, supervisors, and workers making inspections, correcting unsafe acts, and establishing a positive safety attitude among their personnel. We need to continue to emphasize the need for all personnel to follow established procedures in order to improve our 1979 missile safety record. Let's make the 1979 missile safety record the best yet.

BIG INSTRUMENT

SOLID STATE ILS

Captain James M. Sullivan
1st Combat Evaluation Group
Barksdale AFB, Louisiana

"Reno 62 is cleared the HI-ILS, Runway 32. Report commencing approach and departing FL 200."

For many of us, it's been a while since we've heard a clearance for an ILS approach. The long, gradual conversion to solid state ILS equipment left many bases without an ILS. While some units have been able to obtain ILS training at other airfields, many pilots have not had the opportunity to practice an actual ILS approach in some months.

Winter weather will soon yield to wet, low visibility arrival conditions and given our limited proficiency in ILS approaches, a brief review of ILS equipment, procedures, and techniques seems in order.

EQUIPMENT

Let's first consider some idiosyncrasies of the ILS equipment itself. The solid state equipment is a highly reliable guidance system which should prove to be your most valuable approach aid. Some pilots have noted, however, that course guidance seems extremely sensitive and more difficult to maintain. Runway length and the unique "tailored" localizer are the two factors determining course width and cockpit instrument sensitivity.

The "old" ILS system normally provided a course width of 5°. One dot deflection represented 1¼° off centerline every time. Course width for a solid state ILS may vary within the limits of 3° to 6°, with the beam width normally "tailored" to provide a 700′ lateral width at the runway threshold (Fig 1). The exact course width for a solid state ILS depends on the runway length. The longer the runway, the narrower the beam width (Fig 2). For a 12,300′ runway with the localizer antenna 1000′ beyond the end of the runway, the course width is now 3°. One dot deflection would be ¾° off centerline. Therefore, course guidance to a long runway has become more sensitive than it was with our previous ILS equipment. Obviously, the pilot must use smooth, precise control inputs to execute precise ILS approaches using this more sensitive system.

The tailored course has an additional impact when we consider that AFM 51-37 defines "on course" for descent purposes (while being vectored) as an intercept heading to the course with the aircraft within 2½° of course. Due to tailoring, aircraft on a localizer approach to long SAC runways are always within 2½° of centerline when the CDI comes off the edge of the case. Assuming the localizer antenna is 1000′ beyond the runway, we are more likely to be well within 2° of centerline at "case break." In fact, unless you are approaching a runway whose length is 7100′ or less, you will always be within 2½° of the localizer at "case break."

The *Airman's Information Manual* states that the "localizer provides course guidance throughout the descent path to the runway threshold from a distance of 18 NM from the antenna between an altitude of 1000′ above the highest terrain along the course line and 4500′ above the elevation of the antenna site." The glide slope, however, is normally usable to a distance of 10 NM AFM 55-9 (TERPS) states that the optimum glide path for a military ILS is 2.5° and should not be greater than 3° nor less than 2°. Likewise, if VASI is installed on the ILS landing runway, its glide slope angle and Ground Point of Intercept (GPI) should coincide. This could be very important to remember when transitioning to visual cues for landing. Be aware, however, that some bases have VASI's designed for special mission or performance aircraft and these systems may not coincide with the ILS. Check your IFR supplement to determine if such special conditions exist.

FLYING THE APPROACH

When flying the ILS, pilots may transition to the final approach using a published approach procedure or radar vectors. Flight manuals prescribe equipment operating instructions for your particular aircraft; however, AFM 51-37 provides general guidelines for all pilots.

After you have tuned and identified the proper frequency, continue to monitor the identifier throughout the approach and set the published localizer front course in the course selector window prior to intercepting the localizer. Program your flight director as specified in your flight manual and use all means available (Nav Aids and Radar) to remain oriented to the localizer course.

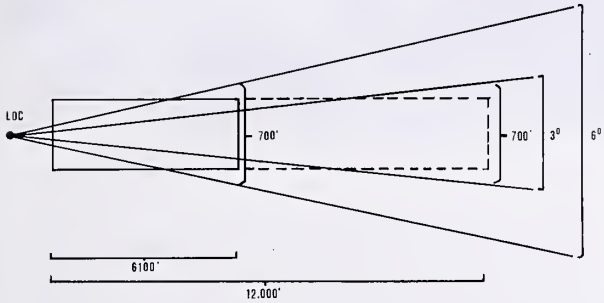
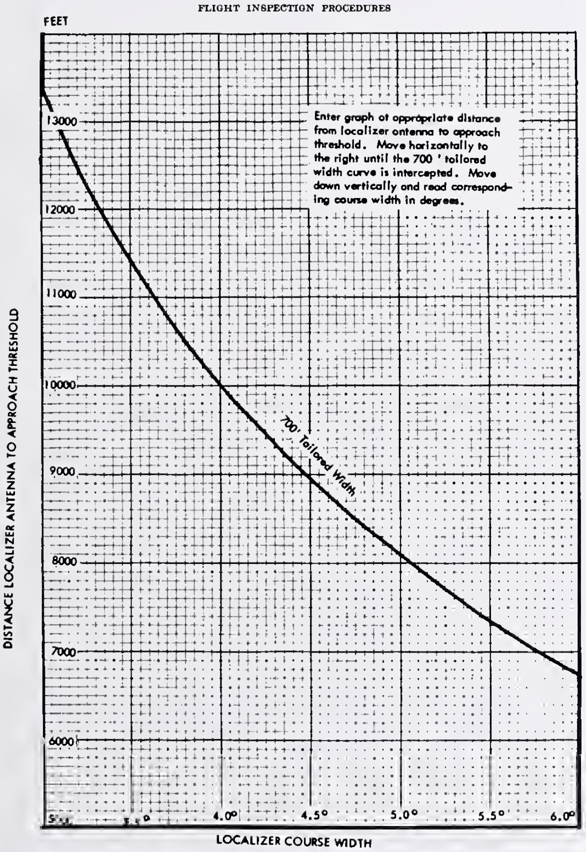


FIG. 1



Enter graph at appropriate distance from localizer antenna to approach threshold. Move horizontally to the right until the 700 ' tailored width curve is intercepted. Move down vertically and read corresponding course width in degrees.

Tailored Localizer Course Width.

FIG. 2

If the pilot is flying a published procedure, he should maintain published altitudes until intercepting the glide path. If being radar vectored, maintain the last assigned altitude until established on course. The pilot should compute the rate of descent required to maintain the glide path and smoothly adjust pitch to establish the descent as he intercepts the glide path. One technique is to lower the aircraft nose the number of degrees equal to that of the glide path; i.e., for a 2.5° glide path, reduce pitch 2½° and adjust power or drag to maintain final approach airspeed. For a given configuration, adjusting a control instrument such as fuel flow to a target value is one way to establish required power.

Throughout the approach, keep power and control movements small (within 1° of pitch and 5° of heading recommended). If employing command steering bars, constantly crosscheck the "raw data" provided by the CDI and GSI and remember that as you fly closer to the runway, course/glidepath airspace narrows and smaller pitch and bank corrections will be required for any given instrument deflections.

WHAT IF ——?

The old question of "What if" and "What now" should be in the back of every pilot's mind when flying any approach and he must be aware of possible equipment malfunctions which might require expeditious action. If glide slope indications become unreliable, will you continue with a localizer approach? What about timing for a localizer — did you remember to start a watch? What are the weather conditions and is the aircraft being radar monitored? Furthermore, pilots must be aware of their options and procedures in the event of other malfunctions. If the localizer course becomes unreliable or the CDI is fully deflected on final approach, abandon the approach. If the GSI indicates more than one dot "fly up" or two dots "fly down," do not descend below localizer minimums unless the glide slope is recaptured within these tolerances.

A well-executed ILS could mean the difference between a safe landing and a weather diversion. If pilots understand the ground and airborne equipment and are familiar with ILS and ATC procedures, half the battle is won. AFM 51-37 is an aviation "best seller." Review it often and have a safe flight.

CASTLE STORY...

Continued from page 4

Following a successful check flight, each crew flies a solo mission. This final step assures quality of the CCTS product by demonstrating the crew's ability to perform the mission and tasks without instructor assistance. A solo flight is a significant milestone in the career of every aviator and SAC flyers are no exception. When crews leave Castle, they, as well as SAC, are confident in their ability to fly a combat mission.

NOT REALLY THE END

Training at Castle never really ends. In addition to the 450-500 students attending initial/requalification training at any one time, 45-50 crewmembers are entered in Castle's Central Flight Instructor Course (CFIC). CFIC has undergone many changes in recent years. An expanded course format, incorporation of the instructional systems concept, and several instructional flights now provide instructor candidates the skills necessary to conduct effective, viable training at their home units.

Many other specialized courses are conducted at Castle. Division and wing commander's courses condense B-52 and KC-135 coursework into a format useable by those in command. These week long courses are routinely presented to senior commanders and staff officers at the direction of HQ SAC. Other regularly scheduled special courses include B-52G and H Difference training, a SRAM Staff Officers' Course, the T-4 Supervisor Course, and the Pilot's Annual Instrument Refresher Course.

New aircraft conversion programs and development of new equipment often results in calls to Castle to develop specialized short term courses. For example, members of the 4017th were responsible for training as well as overseeing the Automated Offset Unit modification in SAC's B-52 fleet. When the Air National Guard and Air Force Reserves began accepting KC-135s into their inventory, both the 4017th CCTS and the 93d AREFS at Castle became involved. Academics and initial flight instruction were conducted at the conversion units' locations throughout the country. This program continues today as new Guard and Reserve personnel train for tanker crew positions.

About 1,000 individuals attend Castle's diversified training programs each year. This is in addition to the endless annual flow of about 1400 B-52G/H and KC-135 CCTS students.

MAINTENANCE AND STAFF AGENCIES

It takes more than good instructors to keep aircraft flying and ensure the smooth administration of the training program. The 93d Bomb Wing maintenance organization deserves a great deal of credit for the success of the student training program at Castle. Last year the 93d Bomb Wing flew almost 2,000 B-52 sorties and over 3,200 KC-135 sorties. B-52 sorties average 9.3 hours while the average KC-135 mission is 6.2 hours. The 93d Bomb Wing accounts for about 14% of SAC flying hours while using only 8.7% of SAC's aircraft.

Bombers and tankers at Castle flew over 35,000 hours in 1977, almost entirely in support of student training. Surprisingly, the cost of flying B-52s at Castle is approximately $100 lower per hour than the SAC average. Though many factors enter into determining this figure, it is significant and shows the cost-effectiveness of the training program.

The 93d BMW headquarters building is a beehive of activity. Dedicated and talented training specialists monitor, coordinate and establish schedules, training and retraining requirements, flying sorties and specialized briefings. They insure that each student training sortie at Castle is flown to give maximum training. In addition to duties related to student training, the wing staff keeps the 93d BMW crews updated and prepared for their EWO mission.

CHANGE TO CONTINUE

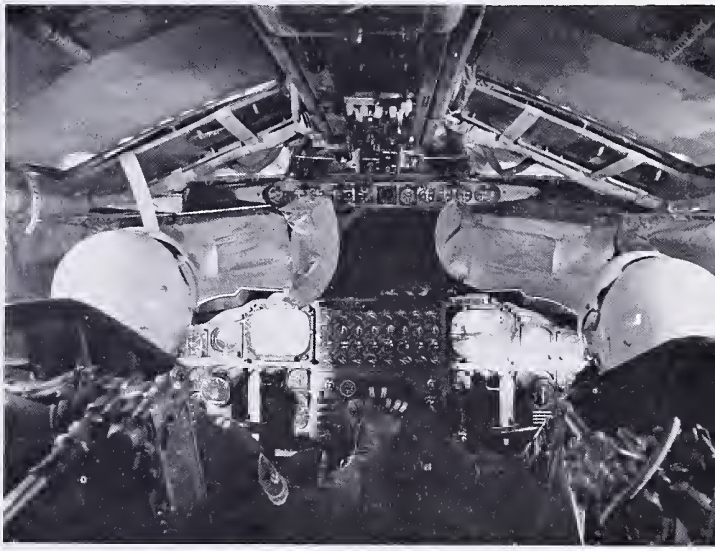
Future students at Castle will continue to discover changes. New simulators, and the expanded use of the simulators will be among the most noteworthy developments. The advanced state of the art of simulation is expected to facilitate continued production of highly qualified crewmembers while permitting reductions in overall training and operating costs.

During 1978, two of the trainers will be installed at Castle. The first of these is a part-task trainer in which student boom operators will simulate inflight refueling without leaving the ground. This new, computer-controlled trainer duplicates everything the student would expect to see from the boom operator's position in the KC-135 and should reduce the inflight air refueling practice required for a new boom operator.

An air refueling part-task trainer for B-52 pilots was delivered in late 1978 and should finish acceptance tests in 1979. With its motion and visual systems, this trainer will permit student pilots to complete a majority of their inflight refueling training in a realistic simulation environment. With the advent of these trainers, the very precise skills required for formation flying and air refueling with the B-52 and KC-135 in contact position will be developed prior to actual flight.

The weapons systems trainers (WST), expected to be delivered in 1980, are a future step in the development of advanced groundbased simulators. These systems will replicate a B-52 and KC-135 aircraft and will provide complete mission profiles for entire student crews. Further, they will have the capability of simulating any flight environment. Once the crews are on board, they will not be able to tell the difference between this simulated environment and actual flight. The most significant feature of the WSTs is that an integral team will be able to train for any mission they may be required to fly in the aircraft, at a substantial cost savings to the taxpayer.

Other changes are sure to follow. But one factor will never be allowed to change — the quality of the Castle product — the SAC combat crewmember. Everyone at Castle accepts the challenge to insure that the finest possible training will continue to meet forecast mission requirements.



Gotta Be Tough To Fly the Heavies, motto of the 328th Bomb Squadron, is exemplified by the wing's two-fold mission. Both B-52 and KC-135 instructors maintain their own skills to fly an EWO mission while training combat crewmembers for all of SAC. Here two B-52 instructor pilots have installed thermal curtains to simulate a closed-cockpit environment during an exercise. The 93d Bomb Wing crews undergo ORI inspections except for the flying phase.

Amn Laura Carstens, AMS Autopilot shop, works on one of the compass systems used in our B-52 and KC-135 aircraft.

THE NEW BREED

Lt Col Richard O. Yoder
7th Bomb Wing, Carswell AFB

We need a "new breed" of instructor in today's Air Force. We need people who can get more out of what's available, who can think for themselves and make intelligent decisions. The old adage "Do it because I told you to do it" won't work.

How does one become an instructor? Let's face it, if you've been in the Air Force over two or three years, the next step up the ladder probably is upgrading to instructor. SACR 60-4, Vol I, sets up the basic requirements and philosophy for upgrading to instructor, but of course you'll have to also use the appropriate 51 series training manual for your specific instructor upgrade program.

The first step is to be selected for the instructor upgrade program. There are some specific prerequisites, mainly minimum time requirements and experience in the weapon system, but more important, you should be selected on your instructor aptitude. What in the world is "instructor aptitude?" It is a term for many things, but it must include your judgment, technical knowledge, instructional ability and the use of instructional materials. We must assume that you are already highly proficient in your crewmember specialty or you have no business being considered for instructor duties.

All right, back to instructor aptitude. Where do you get these nice instructor qualities?

No one can make you a good instructor. It is something you have to develop within yourself. Now don't give up and stop reading, there are many good instructor courses throughout the Air Force that can and will help you, but I say again, if you are to be a good instructor, you must want to be a good instructor and put forth the effort. Let's look at a few items you need to consider in order to be an instructor of the new breed.

Judgment — To me this is another word for common sense and a lot of it seems to develop within us naturally. However, I am sure you have seen people that you felt didn't have much common sense. What can you do to improve your judgment? First, get as much information as possible about the situation, but be sure it is correct information and it is in the proper context. Think the situation through to its conclusion, be logical in your reasoning process. Don't make snap decisions if there is time to collect pertinent data, but don't delay when a decision is needed.

Technical knowledge — Perhaps you have already gained some technical knowledge in the field of instructing. In high school or college you may have taken a public speaking course and I'm sure you've all written themes for English class, so you do have some background to work from. How about OTS/OCS/ROTC or PME/Leadership courses? I doubt if there is a crewmember who hasn't been through at least one of these. Some of you who have been around longer may have the advantage of SOS or NCO school, so this could be another source you can draw upon to develop your instructional skills. But what can you do today? Have you ever heard of AFM 50-62, Principles and Techniques of Instruction, 4235 STS study guide 12005, A Guide to Effective Instruction, or SACM 50-6, Standardization and Evaluation Concepts and Techniques? These manuals can provide you with the techniques of instruction, but again it is still up to you to make it work. You have to learn what the techniques are and to put them to use, no amount of instruction from someone else can do it for you. Technical knowledge also includes being able to use other documents such as the weapon system's tech order, AFR 60-1, AFR 60-16, SACR 60-4, SAC 51 series and many other regs and manuals. Study these documents and be able to use the information in them.

Instructional Ability — This is putting to use your instructional knowledge. You can have all the knowledge in the world but you can't share it with others if you can't instruct. So, know the instructional techniques and then practice instructing. Grasp every opportunity available to sharpen your instructional skills. Don't sit back waiting to be assigned instructional duties, seek out situations that can make you a better instructor.

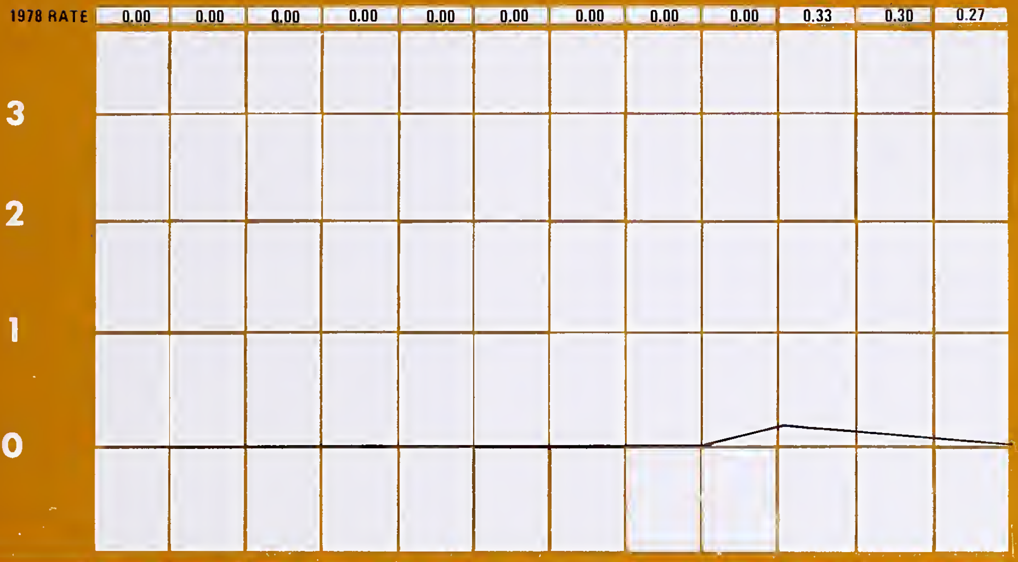
Crewmember Proficiency — You shouldn't have to be reminded about your personal proficiency, but it is very important that you maintain your personal capabilities as high as possible. There is no way you can answer that sharp student's questions if you aren't keeping up to date yourself. Personal pride should keep you right on top of the latest changes, but you have to work at it.

By now, if you are instructor material, you have figured out that the most important ingredient in being a good instructor is your personal effort. All the information is available and it has been laid out for you; however, you must put it into action. No one else can make you the sharp instructor you need to be; but you can be that "new breed" of instructor if you put forth the effort.

HANGAR FLYING

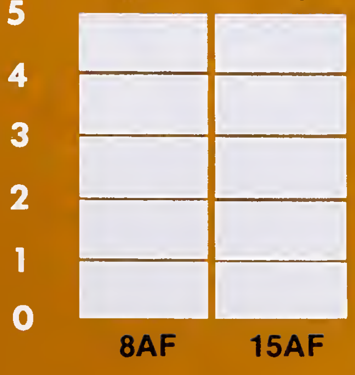
1979 Flying Safety Rate

SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1978	0	0	0	0	0	0	0	0	0	1	0	0
1979	1											

1979 SUBORDINATE CMD RATES



LEGEND ⁀ =1978 RATE

MISHAP STATUS

B-52H	JAN 79

ACE TOPICS

WOULD YOUR PRE-FLIGHT INSPECTION HAVE CAUGHT THIS? — If you have been around the T-38 for any length of time, you have no doubt observed one or more main-gear tire changes. It's also a good bet that some of these have been rather rushed in an attempt to make your takeoff time. This is exactly what happened in a recent mishap. The result was that shortly after takeoff and prior to gear retraction, the right wheel fell off the aircraft. The pilot burned down gas and ultimately made a safe landing on a foamed runway. Investigation revealed that the wheel could be assembled without the spacer if the retaining nut was overtightened. The individuals who performed the maintenance could not specifically recall installing the spacer and also were not sure if any extra parts were left over. The investigator concluded that maintenance failed to install the spacer. Now you might be saying that the spacer is a maintenance problem and of no concern to the aircrews. Well, that is not entirely true. The checklist directs that, in addition to the specific items listed, the aircrew should also check the general condition of the aircraft. To me this means checking numerous things, but if an airplane has just undergone a tire change, I'm going to look closely at the tire area. Similarly if the radio was replaced, I'd look closely at the communications/navigation panel and associated fasteners. In other words, aircrews should back up maintenance people and if something doesn't look exactly right, have it checked by qualified personnel. By doing this, it is very possible that aircrew members can prevent mishaps like this lost tire incident. MAJOR MYER

COLD ENCOUNTERS — When it's July in Texas and someone mentions ice, they are usually talking about putting it in a glass or around a keg. Two Tweet pilots recently encountered another kind of ice, and their experience may contain some useful lessons.

The aircrew encountered light rime ice at 18,000 feet and reported this to the SOF. They then requested recovery and were cleared to FL 210. During the climb, they noted rime ice forming on the windscreen and wing leading edges. After leveling off in the clear,

the aircrew noted from one-quarter to one-half inch of ice on the aircraft. Another crew reported to RAPCON that they had picked up ice in the holding pattern at FL 200 and FL 190. Our intrepid aviators were then cleared to descent to FL 200 and enter holding. After reentering the clouds, they noted an increase in their ice load and requested an immediate penetration. RAPCON did not acknowledge this call. While inbound on the second holding pattern, RAPCON cleared the Tweet to descend to FL 180 and penetrate.

The climb to FL 210 probably could have been avoided by a little jawing with RAPCON, but this probably would have complicated recovery for a couple aircraft and climbing through a couple thousand feet of light rime to VMC conditions shouldn't be a problem. The subsequent descent and holding in known icing conditions should have been avoided. The fact that RAPCON had been advised of icing at FL 200 and FL 190 by another aircraft didn't mean they were concerned about it. The pilot was concerned and could have communicated his concern a little more forcefully. A request to hold in the clear at FL 210 until penetrating or receive vectors for a descent away from the IAF may have been granted. If not, the magic word "emergency" may have gotten some results.

Anyone who has flown the Tweet for any length of time has probably gotten into a situation similar to this one. For those who have not, file this little story in your "lessons learned" file.

CAPTAIN KIRKWOOD

EJECTION SEATS — Are you one of those T-38 back seat drivers who has difficulty assuming the proper ejection position because of helmet/canopy interference? Consider the following: It makes little difference whether your helmet/canopy interference is the result of your basic sitting height or the fact that you raised the seat too high. Most ejection emergencies happen so quickly that there isn't any time available to readjust your sitting height. What about the time interval between canopy separation and seat movement? That three-tenths of a second isn't much time to get your head back. What about jettisoning the canopy prior to squeezing the triggers? It may delay your ejection and it could be misinterpreted by the front seater.

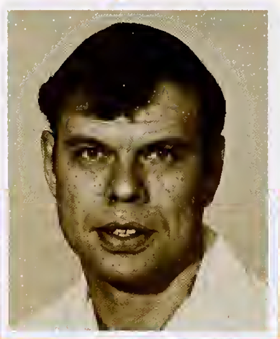
It's difficult to say just exactly what effect poor body position has, but it doesn't help.

So what's all this mean? First, make sure your helmet's fitted properly. Second, don't adjust your seat any higher than necessary. With a little practice you'll find you can see around the front seat for landing without running the seat too high. And lastly, there are a few tall pilots that are having helmet/canopy problems because of the new seat cushion (upgraded ejection seat). Right now, proper helmet fit is about the only immediate answer for them. We're presently working on modifying the seat pack/seat cushion to help the "too tall" pilot, but any fixes will take time.

CAPTAIN SEELEY

PROFESSIONAL PERFORMERS

Individuals selected for these pages as SAC's top professional performers of the month are chosen from nominations made by all SAC units. Selection is made only after all nominations have been carefully screened and those chosen meet the highest standards of excellence outlined in SACR 127-2.



SAC PROFESSIONAL PERFORMER

Ssgt David C. Kaminski, 410 Bomb Wing, K. I. Sawyer AFB, was notified of an overdue RF-4C aircraft from a nearby ANG unit. He remained on duty for 16 hours, coordinating the efforts of the search and rescue aircraft, ground parties, hospital personnel, and flight operations facilities of the USAF and FAA. He accurately determined the location of the downed aircraft and found that the initial position provided to search and rescue aircraft was incorrect. He passed this information to the aircraft home unit and the USAF Rescue Coordination Center, therby saving valuable time in locating and rescuing the downed crewmembers. As the search continued, Sgt Kaminski arranged for a civilian rescue helicopter from a nearby airport to join in the rescue operations. This helicopter was instrumental in finding and recovering the downed crewmembers, he then remained on duty until the helicopter carrying the two crewmen landed safely. The Sergeant's professionalism, dedication, and concern for the welfare of others is deserving of recognition as a SAC Professional Performer.

Minuteman Crew E-172, 564 SMS, Malmstrom AFB: Captain Albert F. Patrick, MCCC, and 2Lt Kenneth L. Cinal, DMCCC.

MINUTEMAN CREW

While on alert at the squadron alternate command post launch control center during the recent SAC Inspector General (IG) visit, Crew E-172 demonstrated exceptional judgment and leadership under adverse conditions. Because of a degraded squadron condition, this crew had responsibility for three sites. At the 27th hour of their 28 and one-half hour alert tour and while conducting missile tests during the readiness phase of the IG evaluation, the crew noticed smoke coming from the UHF radio set, and the distinctive odor of an electrical overheat. Immediately applying the LCC Fire and Overheat Checklist, the crew tripped the appropriate circuit breaker. During the required monitor period the crew examined their technical data to determine what communications had been lost, or would be lost should it be necessary to process the emergency checklist further. While still in the monitoring period, Capt Patrick donned asbestos gloves and removed the UHF radio access cover to insure the radio was cooling and to pinpoint the problem. After making the proper reports to all agencies concerned, the readiness phase of the IG was completed without any discrepancies. Through the quick actions of the crew the overheat was isolated promptly preventing further equipment damage and possible loss of all voice communications. In the final analysis, they performed brilliantly during a long alert tour brought about because the unit was undergoing an IG evaluation and while engaged in a highly stressful period of running missile tests to 30 missiles.

SAFETY MAN

TSgt William H. Ketcher, 341st Strategic Missile Wing, Malmstrom AFB, is Strategic Air Command's Safety Man of the Month. TSgt Ketcher, Squadron Safety NCO for the 341st Missile Security Squadron, is responsible for managing a squadron safety program encompassing the safety and well being of Security Police working on and traveling to and from Minuteman ICBM launch facilities and launch control facilities over a 23,000 square mile area. He undertook a self-initiated special project to develop and implement a detailed safety program for the squadron; a "Supervisor's Safety Management Book" was compiled and placed at the launch control facilities for use by security police personnel. His knowledge and experience is invaluable in the squadron's successful prevention program. His effort in supporting the 341st SMW safety program was recognized by the SAC IG recently and his selection as an outstanding performer and the 341 Missile Security Squadron's outstanding GMV mishap record was cited as noteworthy in the formal inspection report.

MAINTENANCE MAN

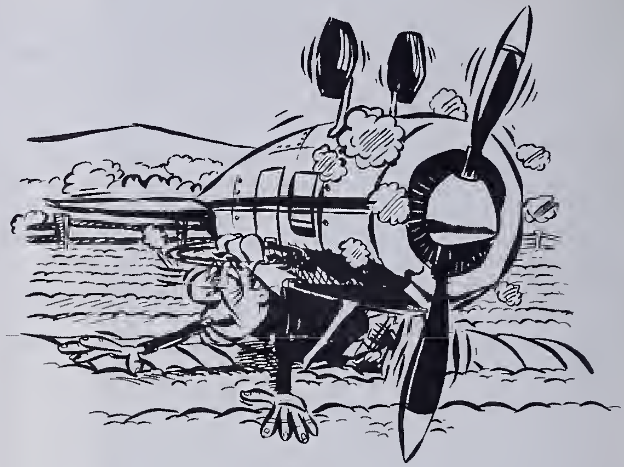
SSgt Julius J. Vana, 2d Avionics Maintenance Squadron (AMS), Barksdale AFB, is Strategic Air Command Maintenance Airman of the Month. Sgt Vana, an airborne navigation systems technician, served as project monitor for the new APN-69C radar system. This system upgrade was completed smoothly, primarily through his efforts. Working numerous hours of overtime, Sgt Vana isolated many problems and initiated corrective action. He also advised other units of the problems encountered in order that they might be alert for the same deficiencies. Recently, when the shop supervisor was hospitalized, Sgt Vana served in that position. For a period of six weeks he managed the shop with a reduced staff and he displayed the expertise of a skilled, highly trained professional. He is a dedicated noncommissioned officer and a valuable asset to SAC.

TITAN CREW

Crew R-016 has demonstrated outstanding system knowledge and ability to operate under stress. During a propellant transfer operation, the commander recognized a failure in the radio type maintenance net (RTMN), the primary means of communication for this type of operation. Without the net, proper control over the operation was lost and it was impossible to monitor the breathing rate of individuals working in Category I protective clothing while they were exposed to toxic vapors during crucial portions of the operation. The crew took immediate action to stop the operation at a safe point and immediately evacuated all personnel to an uncontaminated atmosphere. After assuring the safety of all personnel, the crew analyzed the problem and successfully returned the RTMN system to operation in minimum time. The operation was then resumed and successfully completed. The timely response of Crew R-016 removed two individuals from a situation potentially hazardous to their lives, avoided time-consuming and expensive delays, and minimized "off alert" time for their missile.

Titan Crew R-016, 53d SMS, McConnell AFB: MCCC 1Lt John J. Fraser, DMCCC 1Lt Patricia M. Fornes, MSAT A1C Robert A. Hubble, and MFT A1C Robert J. Bencsko.

OPS HAZARDS



Ed. Note — The following is an account of a civilian private pilot mishap. There's a good message in it for the military pilot — read on.

WHAT — ME WORRY! — On returning from a cross country, a civilian pilot found the weather at his home field below minimums, so he decided to return to the field he departed from. After landing from his 1.5 hour flight he spent the night in his cockpit in order to get an early start the next day.

Without refueling, filing a flight plan, or checking with weather the pilot once again departed. Even though the takeoff was made through a cloud bank at 400 feet AGL (regulations require 1500′ and 3 miles for takeoff) the pilot did not consider checking his destination or enroute weather.

When the pilot arrived at the destination field it was IFR. Two more attempts to find an alternate field that was VFR failed because the weather was not checked. The pilot was now flying above an undercast. Remembering that a town with a VFR airport was passed earlier, the pilot retraced his flight toward the town and made a descent through a hole in the undercast only to discover the descent was made over the wrong town. The pilot was now in an emergency fuel situation. A dirt field was located and an immediate emergency landing accomplished (without making a fly-over as required by regulation). The plane was landed across the plowed furrows which caused the nose gear to dig in and the aircraft to flip over.

Investigation findings included: inadequate crew rest facilities, lack of adequate flight planning, violation of numerous regulations, lack of good judgment and deficient emphasis on flight safety. Here is the moral for all pilots — It is not enough that pilots are knowledgeable of the rules and regulations. They must also be fully aware of the reason they exist and have a complete understanding of the consequences if they are violated.

EN GARDE! — What would cause replacement of all eight tires, holes in the underside of the fuselage, strut and gear door damage to a B-52?

A crew recently found the answer the hard way. The mission had been normal through final touchdown. The runway was dry and the wind calm. On rollout the pilot selected airbrakes six and the drag chute was deployed. At 90 KIAS the pilot checked the brakes. Immediately four tires blew out, and the aircraft veered sharply before the IP took control and stopped the aircraft. It was stopped on the runway but the nose was pointing 100 degrees from the runway heading.

Damage was caused by flying debris from the number 1, 3, 6 and 7 tires. Investigation revealed that the antiskid switch was in the **off** position although **the guard was closed.** The guard is designed to mechanically turn the switch on when closed, however, further investigation of all 14 B-52s at this base revealed that on two B-52s the guard would close without moving the switch to **on.**

All B-52 pilots are reminded that when using guarded switches the switch position must be ascertained prior to closing the guard. This is spelled out in section two of the tech order. A proper procedure makes for smoother landings.

SAC SAFETY SCREEN

151 AREFS, McGhee-Tyson (TNANG): IP Capt Glen A. Knable, IP Lt Col Marshall C. Pierce, IN Capt Ronnie H. Gill, IBO SMSgt Jerry E. Roberts

41 AREFS, Griffiss Crew E-111: FP Capt Stephen C. Nowatzki, CP Capt Gregory B. Dyar, IN Capt Jack S. Carson, IBO Sgt Ronald R. Daily

69 BMS, Loring Crew S-07: AC Capt John B. Harper, CP Lt Gregory A. Whaley, RN Capt Virgil F. Vollmar, N Capt Robert J. Fate, G SSgt Paul J. Shott

42 AREFS, Loring Crew S-116: AC Capt Albert Madrigal, CP 1Lt Carl J. Whatley, N 1Lt Walter Frant, BO SSgt Edward G. Sickenberger

407 AREFS, Loring Crew E-153: AC Capt Ronald A. Collins, CP 1Lt Joseph B. Delia, N Capt Arthur J. Whitmore, BO TSgt Carl L. Beaird

509 AREFS, Pease Crew E-152: P Capt Matthew Gallagher, CP Capt Thomas Duderewicz, N 1Lt Gerard M. Korey, BO SrA David P. Deterra

715 BMS, Pease Crew E-36: P Capt Robert Pulver, N Capt Ernest Pritchard

46 AREFS, K I Sawyer Crew E-106: AC Maj Michael C. Stone, CP 1Lt Joseph M. Marchino II, N 1Lt Charles K. Frost, BO A1C Kevin R. Barttelt

644 BMS, K I Sawyer Crew E-11: AC Capt Eric P. Hansen, CP 1Lt James R. Newman, RN Capt Thomas D. Boo, N Capt Ross E. Jones, EWO 1Lt Andrew M. Mikluscak, G A1C Timothy A. Picardi

44 SMW, Ellsworth Crew R-011: MCCC 1Lt Jeffrey W. Neuber, DMCCC 1Lt Linwood L. Little

91 SMW, Minot Crew R-095: MCCC 1Lt Steven G. Tiner, DMCCC 2Lt Seth H. Fischer

308 SMW, Little Rock Crew E-114: MCCC Capt Claude J. Snelgrove, DMCCC 2Lt Timothy J. Lampe, MSAT Sgt Donald L. Williams, MFT SSgt Ronald D. Fuller

351 SMW, Whiteman Crew R-151: MCCC 1Lt Gerald J. McFarlane Jr., DMCCC 2Lt LeeRoy A. Martin

The SAC Safety Screen is an honor roll of SAC's most professional crews. To gain listing on the Screen, crew members must be nominated by their unit commanders and meet high selection criteria of experience in their aircraft or missile system *IAW SACR 127-2*.

⋆U.S. Government Printing Office
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UNIVERSITY OF FLORIDA
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HALL OF FAME

TACTICAL FLYING

OVER TWENTY-TWO YEARS

170 AREFG, McGuire (NJANG)	NONE

OVER TWENTY YEARS

171 AREFW, Greater Pittsburgh (PAANG)	Mar '58
157 AREFG, Pease (NHANG)	Jun '58
97 BMW, Blytheville	Aug '58

OVER NINETEEN YEARS

940 AREFG, Mather (USAFR)	May '59
307 AREFG, Travis	Sep '59

OVER EIGHTEEN YEARS

19 BMW, Robins	Oct '60

OVER SEVENTEEN YEARS

151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61
134 AREFG, McGhee Tyson (TNANG)	Aug '61

OVER SIXTEEN YEARS

340 AREFG, Altus	Feb '62
301 AREFW, Rickenbacker	Jul '62
96 BMW, Dyess	Aug '62

OVER FOURTEEN YEARS

160 AREFG, Rickenbacker (OHANG)	Dec '64

OVER THIRTEEN YEARS

320 BMW, Mather	Jul '65

OVER TWELVE YEARS

452 AREFW, March (USAFR)	Sep '66

OVER ELEVEN YEARS

92 BMW, Fairchild	Feb '67
55 SRW, Offutt	Jul '67
2 BMW, Barksdale	Aug '67

OVER NINE YEARS

5 BMW, Minot	Feb '69
42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69

OVER EIGHT YEARS

28 BMW, Ellsworth	May '70

OVER SIX YEARS

7 BMW, Carswell	Mar '72
101 AREFW, Bangor (MEANG)	Mar '72
416 BMW, Griffiss	May '72
305 AREFW, Grissom	Aug '72
376 SW, Kadena	Nov '72

OVER FIVE YEARS

379 BMW, Wurtsmith	Apr '73

OVER FOUR YEARS

384 AREFW, McConnell	Mar '74
189 AREFG, Little Rock (ARANG)	May '74
43 SW, Andersen	Dec '74

ICBM

OVER FOURTEEN YEARS

90 SMW, F E Warren	Jul '64
1 STRAD, Vandenberg	Sep '64

OVER THIRTEEN YEARS

308 SMW, Little Rock	Aug '65

OVER EIGHT YEARS

341 SMW, Malmstrom	Apr '70

OVER FIVE YEARS

390 SMW, Davis-Monthan	Jul '73

OVER FOUR YEARS

351 SMW, Whiteman	Oct '74
91 SMW, Minot	Nov. '74

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months.